

CLAIMS

What Is Claimed Is:

1. An optical scanning apparatus for optically scanning a surface to be scanned at a constant velocity, the optical scanning apparatus comprising:

    a light source for emitting a light flux;

    a first optical lens system for coupling the light flux emitted by the light source to a following optical lens system;

    a second optical lens system for forming the light flux from the first optical lens system into a line image extending in a direction corresponding to a main scanning direction of the surface to be scanned which is perpendicular to a sub scanning direction;

    an optical deflector for deflecting the light flux formed as the line image via a deflecting reflective plane thereof, which is located near where the line image is formed; and

    a third optical lens system for condensing the deflected light flux as an optical beam spot on the surface to be scanned; wherein

    the second optical lens system includes a glass lens and at least one plastic lens having a non-arc shape,

*new*  
wherein the at least one plastic lens has a negative power  
in the sub scanning direction.

2. A method of manufacturing an optical scanning apparatus, the method comprising the steps of:

*Sub*  
*at*  
*arranging*  
*optical*  
*lens*  
*system*  
*couple*  
*the*  
*light*  
*flux*  
*emitted*  
*by*  
*the*  
*light*  
*source*  
*to*  
*a*  
*following*  
*optical*  
*lens*  
*system*  
*;*

providing a light source for emitting a light flux;  
arranging a first optical lens system so as to couple the light flux emitted by the light source to a following optical lens system;

*forming*  
*a*  
*second*  
*optical*  
*lens*  
*system*  
*to*  
*include*  
*a*  
*glass*  
*lens*  
*and*  
*at*  
*least*  
*one*  
*plastic*  
*lens*  
*having*  
*a*  
*non-arc*  
*shape*  
*and*  
*negative*  
*power*  
*in*  
*a*  
*sub*  
*scanning*  
*direction*  
*;*

*arranging*  
*the*  
*second*  
*optical*  
*lens*  
*system*  
*following*  
*the*  
*first*  
*optical*  
*lens*  
*system*  
*such*  
*that*  
*the*  
*second*  
*optical*  
*lens*  
*system*  
*forms*  
*the*  
*light*  
*flux*  
*from*  
*the*  
*first*  
*optical*  
*lens*  
*system*  
*into*  
*a*  
*line*  
*image*  
*extending*  
*in*  
*a*  
*direction*  
*corresponding*  
*to*  
*a*  
*main*  
*scanning*  
*direction*  
*of*  
*the*  
*surface*  
*to*  
*be*  
*scanned*  
*which*  
*is*  
*perpendicular*  
*to*  
*the*  
*sub*  
*scanning*  
*direction*  
*;*

*arranging*  
*an*  
*optical*  
*deflector*  
*so*  
*as*  
*to*  
*deflect*  
*the*  
*light*  
*flux*  
*formed*  
*as*  
*the*  
*line*  
*image*  
*via*  
*a*  
*deflecting*  
*reflective*  
*plane*  
*thereof*  
*,*  
*which*  
*is*  
*located*  
*near*  
*where*  
*the*  
*line*  
*image*  
*is*  
*formed*  
*;*  
*and*

arranging a third optical lens system so as to condense the deflected light flux as an optical beam spot on the surface to be scanned.

3. An optical scanning apparatus for optically scanning a surface to be scanned at a constant velocity, the optical scanning apparatus comprising:

means for emitting a light flux;  
means for coupling the light flux emitted by said  
means for emitting a light flux to a means for forming the  
light flux into a line image;

means for forming the light flux received from the means for coupling the light flux into a line image extending in a direction corresponding to a main scanning direction of the surface to be scanned which is perpendicular to a sub scanning direction;

means for deflecting the light flux formed as the line image via a deflecting reflective plane thereof, which is located near where the line image is formed; and

means for condensing the deflected light flux as an optical beam spot on the surface to be scanned; wherein

the means for forming the light flux into the line image includes a glass lens and at least one plastic lens

*new*  
having a non-arc shape and negative power in the sub  
scanning direction.

4. An image forming apparatus for forming an image by optically scanning a surface to be scanned at a constant velocity, the image forming apparatus comprising:

*Sub*  
means for emitting a light flux;  
means for coupling the light flux emitted by said means for emitting a light flux to a means for forming the light flux into a line image;  
means for forming the light flux received from the means for coupling the light flux into a line image extending in a direction corresponding to a main scanning direction of the surface to be scanned which is perpendicular to a sub scanning direction;  
means for deflecting the light flux formed as the line image via a deflecting reflective plane thereof, which is located near where the line image is formed; and  
means for condensing the deflected light flux as an optical beam spot on the surface to be scanned; wherein  
the means for forming the light flux into the line image includes a glass lens and at least one plastic lens having a non-arc shape and negative power in the sub scanning direction.